DOCUMENT RESUME

ED 250 086 PS 014 662

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TITLE Early Identification System: Four-Year Followup of the Kindergarten Class of 1978-79. Research Report 84-01.
INSTITUTION London Board of Education (Ontario). Educational Research Services.
PUB DATE [83]
NOTE 13p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Academic Ability; *Academic Achievement; Age; Elementary Education; Followup Studies; Foreign Countries; *Identification; *Kindergarten Children; *Predictive Validity; Sex; *Student Evaluation; *Student Mobility
IDENTIFIERS Ontario (London)

ABSTRACT

During the 1978-79 school year, an early identification (EID) process based primarily on teachers' judgments was applied in kindergarten and grade 1 classes. The EID ratings, made separately for language/reading and mathematics, consisted of the following scale: 0 = no judgment made; 1 = student will be ready, by the end of the school year, for the next school year's work; 2 = student may not be ready for the work of the next school year; and 3 = it is quite certain that, by the end of the school year, the student will not be ready for the next year's work. In the 2 years following the implementation of the EID procedure, the process was extended to cover grades 2 and 3. Subsequently, identification procedures have been applied annually. A number of previous reports have described findings and provided some evidence concerning the concurrent and predictive validity of the process. This study represents a further attempt to assess predictive validity by relating teachers' ratings to students' scores on standardized tests of academic aptitude and achievement. Additionally reported are a detailed analysis of the pattern of students' early identification ratings over the 1978-79 to 1981-82 years and the relationship of these patterns to students' sex, age, ability, and achievement. The association of student geographic mobility with student characteristics and early identification ratings is also described. Generally, the 4-year follow-up of the 2,569 students in kindergarten classes of 1978-79 confirms the findings of earlier studies, indicating that EID ratings have satisfactory predictive validity and that changes in students' status from year to year are sufficient to justify annual screenings. (RH)

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EARLY IDENTIFICATION SYSTEM: FOUR-YEAR FOLLOWUP OF THE KINDERGARTEN CLASS OF 1978-79

R. G. Stennett, Ph.D. & L. M. Earl

Research Report 84-01

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EARLY IDENTIFICATION SYSTEM: FOUR-YEAR FOLLOWUP OF THE KINDERGARTEN CLASS OF 1978-79

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Educational Research Services
London Board of Education

During the 1978-79 school year an Early Identification process, based primarily on teachers' judgments, was applied in kindergarten and grade 1. In the two subsequent years, the process was extended to cover grades 2 and 3 and subsequently has been applied annually. A number of previous reports (Stennett & Earl, 1978, 1979, 1980, 1981, 1982) have described the findings and provided some evidence concerning the concurrent and predictive validity of the process. This study represents a further attempt to assess the predictive validity of the identification process by relating teachers' ratings to students' scores on standardized tests of academic aptitude and achievement. In addition, some detailed analysis of the pattern of students' early identification ratings over the 1978-79 to 1981-82 years and the relationship of these patterns of ratings to students' sex, age, ability and achievement are reported. The association of student geographic mobility with student characteristics and early identification ratings is also described.

METHOD

Sample

All 2569 students who were enrolled in kindergarten for the first time during the 1978-79 school year were included in the study. For some analyses only students who were still in the system and for whom early identification (EID) ratings were available for each of the four years were included.

Followup Procedures and Availability of Data

The following procedures were used to ensure that as many as possible of the kindergarten class of 1978-79 were located during the 1982-83 school year and that as much relevant data as possible was collected:

(1) Using the original 1978-79 EID file as a base, EID ratings for 1979-80, 1980-81 and 1981-82 were added for all students who were screened during those three years.

(2) EID ratings done during November to January of the 1982-83 school year in grades 1 to 3 were used to locate any students who had, since 1978-79, repeated one or more grades.

(3) Listings of the system-wide ability and achievement testing done during the 1981-82 school year were reviewed to locate any students who had been accelerated.

(4) Lists of all students enrolled in primary-level special education classes were reviewed to locate any 1978-79 kindergarten students enrolled in such classes during 1982-83.

(5) Since most of the 1978-79 kindergarten class were enrolled in grade 4 during the 1982-83 school year, results of the system-wide October 1982 administration of the Canadian Tests of Basic Skills (CTBS) and the Otis Ability Test were obtained for them from the Measurement and Evaluation Service.

(6) For any student who could not be located using the prior steps, a telephone call was made to his last known school location.

Despite these procedures, it was not possible to determine the current, i.e., 1982-83, location and educational status of all of the students enrolled in kindergarten for the first time in 1978-79. Specifically, those students who left the school system during the period 1978-79 to 1982-83 and did not return were lost to the followup. An unknown, but probably small number of students were also lost because frequent changes of school and limitations of our record-keeping systems made it impossible to trace them.

A significant limitation of this study is that we do not have standardized ability and achievement measures for any student who either repeated one or more grades or was enrolled in a special class during the 1982-83 school year. These students, of course, constitute a particularly important part of the sample for establishing the predictive validity of the EID ratings. All such estimates in this report are, therefore, likely to be under-estimates. (Additional analyses will be conducted during the 1983-84 school year when most of these missing data will be available.)

The reader should also bear in mind that all successful interventions, taken as a result of the EID process, will tend to reduce any estimates of the predictive validity of the EID ratings.

Variables Available for Study

The following variables were available for study: sex; month of birth; chronological age at the beginning of each year 1978 to 1981; early identification ratings[1] for language and mathematics combined for

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[1] EID ratings, made by classroom teachers and school teams separately for language/reading and mathematics, consist of a simple scale, as follows:

0 = insufficient contact with students to make a judgment
1 = student will be ready, by the end of the school year, for the work of the next school year
2 = student *may not be ready*, by the end of the school year, for the work of the next school year
3 = it is *quite certain* that the student *will not be ready*, by the end of the school year, for the work of the next school year.

1978-79 and separate ratings for reading and mathematics for the three subsequent years; school location for the years 1978 to 1982....from which a measure of mobility was derived; a code indicating the student's status in the fall of 1982; Otis IQ and standard score; CTBS grade 4 standard scores for Reading Comprehension, Mathematics Computation (London Math), Mathematics Problem Solving and an average of these three scores; an estimate of mental age as of September for each of the years 1978 to 1981 (based on grade 4 Otis IQ).

Data Analyses

All data analyses were conducted using the standard statistical programs contained in SPSS[x].

RESULTS

Status in September, 1982

Table 1 shows the status of the entire cohort of 1978-79 kindergarten students as of September 1982, by school team EID rating in kindergarten. Table 2 presents the same information for those students who were still in the system in September 1982. A number of pertinent observations can be made from these data: (1) Four years after kindergarten, slightly more than one quarter (26.5%) of the students have left the system. (2) Slightly less than two thirds (63.5%) were enrolled in regular grade 4 classes. (3) About 6.9% of the students were repeating either grade 2 or grade 3. (4) About 3.1% were enrolled in special education classes. (5) None had been accelerated.

Of the students still in the system in the fall of 1982, 86.4% were in grade 4, 9.4% were repeating either grade 2 or grade 3 and the remainder (4.2%) were enrolled in special education classes.

It is also clear that the September 1982 status of the students is related very significatnly to the EID rating they received in kindergarten. Thus, while 93% of students rated 1 in kindergarten were in grade 4 at the time of followup, only 31% of those rated 3 were so enrolled. Conversely, while only 6% of the students rated 1 had repeated a grade, 28% of those rated 3 had been held back. While 41% of students rated 3 were in special classes, less than 2% of students rated 1 were so enrolled.

EID Ratings and Student Mobility

A measure of a student's mobility, i.e. the number of different schools he or she attended during the years 1978-79 to 1981-82, was developed for each student from the school location data collected at the time the EID ratings were made. This measure could only be calculated for those 1635 students for whom EID ratings were available in each of

the four years. Since this measure does not include moves made between the times EID ratings were made, it is likely to be a conservative one.

Table 3 gives a statistical summary of the characteristics of students, grouped by the number of different schools they attended. It is apparent from these data that: (1) Only about three quarters (76.4%) of the students who were enrolled in regular classes for all four years remained in the same school for each of the four years. (Only 49% of the total sample did so.) (2) Increasing mobility is associated with progressively decreasing performance on both ability and achievement tests. (3) Increasing mobility is associated with more frequent team EID ratings of 2 or 3.

It is not clear from these data whether mobility is a cause or merely a correlate of poor achievement.

Relationships Among EID Ratings Made in Each of Four Successive Years

The relationships among EID team ratings made in each of four successive years were assessed using only those 1611 students (63% of the total sample) who passed each year and for whom ratings were available in each of the four years. For this reason, the strength of the true relationships is likely to be under estimated.

Table 4 gives the percent of exact agreement among school team EID ratings made in kindergarten and the following three years. It is evident from these data that the degree of agreement is fairly high and slightly higher for mathematics than for reading.

Table 5 summarizes the 'errors of prediction' between kindergarten and each of the following three years. The top half of Table 5 shows, separately for reading and mathematics, the percentage of cases in which a kindergarten rating of 1 is followed by ratings of 2 or 3. The errors of prediction are larger for reading than for mathematics and increase, as expected, with the time interval between ratings. In the case of reading about 1 in 6 students who obtained a kindergarten EID rating of 1 received a fourth year rating of 2 or 3.

The bottom half of Table 5 shows the percentage of cases in which a kindergarten rating of 2 or 3 is followed by ratings of 1. The 'errors of prediction' are fairly similar for reading and mathematics and do not change greatly as the time interval between ratings increases. The overall size of this kind of error is somewhat lower than those discussed above.

The most critical 'errors', which also are the most numerous, involve an apparent failure to identify students in kindergarten who will subsequently have difficulty in reading. The fact that these 'errors' increase with the time interval between ratings reinforces the practice of annual EID rating.

Four-Year Patterns of EID Ratings and Their Relationship to Various Student Characteristics

In order to study the pattern of EID ratings over a four-year period and assess their relationship to various student characteristics, the following procedure was adopted. For kindergarten, a student who was rated 1 was given a code of 1; a student rated either 2 or 3 was given a code of 2. For grades 1 to 3, a student who was rated 1 in both reading and mathematics was given a code of 1; a student who received a rating of either 2 or 3 in either reading or mathematics was given a code of 2. Thus, for each of the four years a student could get a code of either 1 or 2. The codes for each year were then combined to indicate the pattern of the student's EID ratings over the four years. For example, if a student's EID ratings were 3 for kindergarten, 1 for reading and 1 for mathematics in both grades 1 and 2, and 2 for reading and 1 for mathematics in grade 3, his pattern of codes would be 2112. Given this procedure for simplifying the students' EID ratings for each year into a 1 or 2, there are sixteen possible patterns ranging from 1111 to 2222.

When the simplified four-year pattern had been derived for each student, all students were simply grouped together by pattern and a number of statistics calculated for each group. Since only students who had passed each year had reached grade 4 during 1982-83 and thus had taken the system-wide ability and achievement tests, all other students were excluded from the analyses. The reader should note that excluding such students (i.e., those repeating grade 2 or 3 and those enrolled in special classes) significantly reduces the degree to which differences among students with differing patterns of EID ratings can emerge.

Table 6 shows the characteristics of students with different four-year patterns of simplified EID ratings. The following trends are apparent in these data: (1) All possible 16 patterns of ratings appear, but with frequencies which vary widely from those representing 63% of all cases (1111) to less than 1% (2121). (2) The more 2s the patterns contain the less frequently they appear (no 2s, 62.8%; one 2, 17.6%; two 2s, 10.2%; three 2s, 9.3%). (3) In general, the more 2s a pattern contains, the more likely the group of students who exhibit it will be characterized by being disproportionately male, having been born in the last half of the year and having obtained below average scores on tests of ability and achievement.

SUMMARY

A four-year followup of the kindergarten class of 1978-79 confirms the findings of earlier studies in indicating that the early identification ratings have satisfactory predictive validity and that changes in students' status from year to year are sufficient to justify annual screening.

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TABLE 1 Status of All 1978-79 First-Time Kindergarten Students As of September 1982 by Kindergarten Team Early Identification Rating.

	Team EID Rating in Kindergarten*						Totals	
	1		2		3			
Status As Of September 1982	N	%	N	%	N	%	N	%
In Grade 4	1459	69.8	130	39.4	20	18.0	1609	63.5
In Special Education Class	22	1.1	30	9.1	26	23.4	78	3.1
Accelerated, in Grade 5	0	0.0	0	0.0	0	0.0	0	0.0
Repeating Either Grade 2 or 3	90	4.3	67	20.3	18	16.2	175	6.9
Left the System	520	24.9	103	31.2	47	42.3	670	26.5
Totals	2091	100.1	330	100.0	111	99.9	2532	100.0

*Students with '0' ratings excluded.

TABLE 2 Status of 1978-79 Kindergarten Students Still in The System As of September 1982 by Kindergarten Team Early Identification Rating.

	Team EID Rating in Kindergarten						Totals	
	1		2		3			
Status As of September 1982	N	%	N	%	N	%	N	%
In Grade 4	1459	92.9	130	57.3	20	31.3	1609	86.4
In Special Education Class	22	1.4	30	13.2	26	40.6	78	4.2
Accelerated, in Grade 5	0	0.0	0	0.0	0	0.0	0	0.0
Repeating Either Grade 2 or 3	90	5.7	67	29.5	18	28.1	175	9.4
Totals	1571	100.0	227	100.0	64	100.0	1862	100.0

TABLE 3 Characteristics of Students Who Were in Regular Classes in the System for Each of the Four Years, Grouped by the Number of Different Schools They Attended.

Variable	Number of Different Schools Attended			
	1	2	3	4
Percent Boys	47.5	48.6	40.0	66.7
Percent Born 7-12	46.4	46.5	50.9	16.7
Mean CTBS Reading SS	61.3	59.2	58.2	54.5
Mean London Math SS	60.6	59.7	59.3	51.7
Mean Math Problem Solving SS	60.6	59.9	58.3	52.3
Mean Otis IQ	105.0	102.5	100.5	97.5
Mean Total Average SS	60.4	59.5	58.3	52.3
Percent Repeating a Grade	2.8	2.8	3.6	0.0
Percent in Special Class	.5	.3	1.8	0.0
0 Years With EID Rating of 2 or 3	64.5	59.1	51.9	0.0
1 Year With EID Rating of 2 or 3	16.6	20.7	25.0	16.7
2 Years With EID Rating of 2 or 3	9.7	11.0	11.5	50.1
3 Years With EID Rating of 2 or 3	6.9	7.5	11.5	33.4
4 Years With EID Rating of 2 or 3	2.1	1.6	0.0	0.0
Number of Cases	1249	325	55	6
Percent of Total Cases	76.4	19.9	3.4	.4

TABLE 4 Percents of Agreement Between Early Identification Reading and Mathematics Ratings in Kindergarten and in the Following Three Years for Students for Whom Ratings Were Available For All Four Years.

	Reading			Mathematics		
EID Ratings in....	Year 2	Year 3	Year 4	Year 2	Year 3	Year 4
Kindergarten	82.6	80.9	77.9	86.5	84.7	81.3
Year 2		81.9	77.1		85.8	82.0
Year 3			79.3			82.4

TABLE 5 Percents of Students With Kindergarten Ratings of '1' or '2 or 3' Who Have Reversed EID Ratings in Years 2, 3 and 4.

Combinations of Kindergarten EID Ratings With Grade 1 to Grade 3 Ratings	Subject Area	Years		
		2	3	4
Kindergarten Ratings of 1 With Year 2 to Year 4 Ratings of 2 or 3	Reading	12.2	13.3	16.8
	Math	7.0	8.6	13.4
Kindergarten Ratings of 2 or 3 With Year 2 to Year 4 Ratings of 1	Reading	5.8	6.4	7.0
	Math	7.0	7.6	6.8

TABLE 6 Characteristics of Students With Various Four-Year Patterns of EID Ratings

Variable	EID Rating Patterns															
	1111	1112	1121	1211	2111	1122	1221	1212	2211	2112	2121	1222	2122	2212	2221	2222
Number of Cases	1011	123	68	62	33	68	28	27	14	16	12	72	14	14	18	31
% of All Cases	62.8	7.6	4.2	3.8	2.0	4.2	1.7	1.7	0.9	1.0	0.7	4.5	0.9	0.9	1.1	1.9
% Boys	44.8	56.1	38.2	50.0	51.5	50.0	57.1	51.9	35.7	43.8	50.0	55.6	85.7	42.9	50.0	71.0
% With Month of Birth 7 to 12	41.2	51.2	42.8	50.0	60.6	42.6	67.9	59.3	71.4	56.2	83.3	48.6	57.1	78.6	66.7	77.4
Mean Reading SS	64.1	56.4	54.3	58.9	57.6	52.4	53.7	55.6	53.7	50.4	56.0	50.8	51.1	53.7	51.8	50.1
Mean London Math SS	63.5	57.1	54.6	59.3	56.7	52.0	56.3	51.9	57.0	48.4	56.6	51.6	50.9	53.4	50.2	50.8
Mean Math Problem Solving SS	63.3	56.9	55.8	56.1	57.4	54.8	54.2	55.1	52.7	49.5	53.5	52.3	48.5	53.6	54.8	53.4
Mean Total Average SS	63.3	56.4	54.7	57.9	57.2	53.1	54.3	53.8	54.2	49.0	55.4	50.8	49.9	53.3	51.9	51.1
Mean IQ	108.9	98.6	95.6	100.8	98.3	91.0	97.6	94.5	96.6	92.6	99.5	90.4	90.1	95.8	94.5	92.9
Mean Mental Age - Kindergarten	68.1	61.2	60.1	62.5	60.1	56.6	59.3	57.7	58.6	56.0	59.0	55.9	54.9	56.6	57.6	55.2
Mean Mental Age - Grade 1	81.2	73.0	71.6	74.6	72.0	67.6	71.0	69.1	70.1	67.0	70.1	66.7	65.6	68.0	68.9	66.4
Mean Mental Age - Grade 2	94.3	84.8	83.1	86.6	83.7	78.4	82.7	80.5	81.6	78.2	82.7	77.7	76.5	79.7	80.4	77.5
Mean Mental Age - Grade 3	107.4	96.7	94.5	98.7	95.6	89.5	94.4	91.8	93.2	89.3	94.6	88.6	87.5	91.1	91.8	88.8
Percent Cases With CTBS	86.9	81.3	86.8	90.3	93.9	83.8	92.9	81.5	78.6	68.8	100.0	62.5	57.1	71.4	88.9	54.8